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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/746,713	12/21/2000	Yasuo Ohdaira	00629CIP/LH	1181

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EXAMINER

LEE, SHUN K

ART UNIT

PAPER NUMBER

2878

DATE MAILED: 04/19/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/746,713

Applicant(s)

OHDAIRA ET AL.

Examiner

Shun Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 December 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 09/652,500.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2 and 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old (*i.e.*, conventional; pg. 6, line 3) is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to because:

(a) in Fig. 4B, "FULORESCENT" should probably be --FLUORESCENT--; and

(b) in Fig. 6B, "FULORESCENT" should probably be --FLUORESCENT--.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

3. Claims 7 and 11 are objected to because of the following informalities:

(a) on line 3 in claim 7, "detects" should probably be --excites--; and

(b) on line 3 in claim 11, "detects" should probably be --excites--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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5. Claim 13 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 13 recites the limitation of an external input circuit outputs a signal to the microscope and is thus unclear if "external input circuit" is an element of the microscope.

6. Claim 13 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: a signal to elements of the microscope.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

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consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 1-5, 7-9, and 11-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toyonaga *et al.* (US 6,025,917) in view of Baer (US 5,866,911).

In regard to claim 1, Toyonaga *et al.* disclose (Fig. 10) a laser scanning microscope comprising:

- (a) a pulse laser oscillator (1) configured to oscillate a pulse laser beam to excite a sample (7);
- (b) a photodetector (13, 14) configured to detect light from the sample (7) and output an electric signal; and
- (c) a sampling circuit (13, 14, 15) configured to sample the electric signal output from the photodetector (13, 14) in synchronism (column 15, lines 35-44) with oscillation of the pulse laser beam output from the pulse laser oscillator (1).

The laser scanning microscope of Toyonaga *et al.* lacks an explicit description that image arithmetic section (16 in Fig. 10) comprises of a memory configured to accumulate data output from the sampling circuit. Laser scanning microscopes are well known in the art. For example, Baer teaches (column 4, lines 31-39) that image processing means (*i.e.*, image arithmetic section) comprises of a video frame store (*i.e.*, memory) which receives and contains the information of the output from the photodetector so that the information content of the memory can be processed. Therefore, it would have been obvious to one having ordinary skill in the art that the image arithmetic section in the laser scanning microscope of Toyonaga *et al.* comprises

of a memory to receive and contain the output from the photodetector, in order to perform image arithmetic.

In regard to claim 2 which is dependent on claim 1, Toyonaga *et al.* also disclose (column 15, lines 35-44; Fig. 10) a synchronous signal generating circuit (15) configured to detect oscillation of the pulse laser beam from the pulse laser oscillator (1), and output a synchronous signal in synchronism with the oscillation of the pulse laser beam, and wherein the sampling circuit (13, 14) samples the electric signal from the photodetector (13, 14) in synchronism with the synchronous signal from the synchronous signal generating circuit (15).

In regard to claim 3 which is dependent on claim 2, Toyonaga *et al.* also disclose (column 15, lines 35-44; Fig. 10) that reference time is defined as the time when the pulse excitation light is radiated from the pulse excitation light source and to obtain images signals at time t_0 for a duration of Δt . Thus it is inherent that the gate controller 15 (*i.e.*, synchronous signal generating circuit) of Toyonaga *et al.* has a delay circuit configured to output a trigger signal obtained by delaying the synchronous signal for a time t_0 , and the sampling circuit (13, 14, 15) samples the electric signal from the photodetector (13, 14) in synchronism with the synchronous signal delayed by the delay circuit.

In regard to claim 4 which is dependent on claim 3, Toyonaga *et al.* also disclose (column 15, lines 35-44; Fig. 10) that reference time is defined as the time when the pulse excitation light is radiated from the pulse excitation light source and to obtain images signals at time t_0 for a duration of Δt . Thus it is inherent that the gate controller

15 (*i.e.*, synchronous signal generating circuit) of Toyonaga *et al.* has a pulse generator configured to generate a gate signal (*i.e.*, pulse signal of duration Δt) in synchronism with the synchronous signal delayed by the delay circuit for a time t_0 , and wherein the sampling circuit (13, 14, 15) samples the electric signal from the photodetector (13, 14) for a period Δt in response to the gate signal (*i.e.*, pulse signal) from the pulse generator.

In regard to claim 8, Toyonaga *et al.* in view of Baer is applied as in claims 1-3 above.

In regard to claim 12 and claim 13 (which is dependent on claim 12 in so far as understood), Toyonaga *et al.* in view of Baer is applied as in claims 1-4 above.

In regard to claim 5 (which is dependent on claim 3), claim 9 (which is dependent on claim 8), and claim 14 (which is dependent on claim 12), the laser scanning microscope of Toyonaga *et al.* lacks that a delay set by the delay circuit is a fixed value. Baer teaches (column 13, lines 48-60) that the output of a detector can be gated to be unresponsive during the time such direct scattered laser light is falling on the detector so as to minimize noise. Therefore, it would have been obvious to one having ordinary skill in the art to provide a fixed delay in the laser scanning microscope of Toyonaga *et al.*, in order for the detector output to be gated unresponsive during direct scattered laser light falling on the detector so as to minimize noise as taught by Baer.

In regard to claim 7 (which is dependent on claim 1) and claim 11 (which is dependent on claim 8), Toyonaga *et al.* also disclose (column 27, lines 18-60; Fig. 10) that the pulse laser oscillator (1) is a mode locked ultra fast pulse laser (*i.e.*, mode-

locked Ti:sapphire laser light source generating 200 fs pulsewidth laser pulses) which detects fluorescence from the sample due to multiphoton excitation (*i.e.*, two photon excitation).

10. Claims 6, 10, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toyonaga *et al.* (US 6,025,917) in view of Baer (US 5,866,911) as applied to claims 3, 8, and 12 above, and further in view of Hänninen *et al.* (US 5,523,573).

In regard to claim 6 (which is dependent on claim 3), claim 10 (which is dependent on claim 8), and claim 15 (which is dependent on claim 12), the modified laser scanning microscope of Toyonaga *et al.* lacks a means for changing a delay set by the delay circuit. Hänninen *et al.* teach (column 7, lines 44-46) that time resolved detection involves starting detection after a delay with respect to the excitation pulse and to delay detection until background signal is sufficiently low. Therefore, it would have been obvious to one having ordinary skill in the art to provide a delay changing means in the modified laser scanning microscope of Toyonaga *et al.*, in order to change a delay set by the delay circuit so as to delay detection until background signal is sufficiently low for time resolved detection as taught by Hänninen *et al.*

Double Patenting

11. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double

patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

12. Claims 1-15 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-13 of copending Application No. 09/652,500. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims are substantially identical (e.g., in copending Application No. 09/652,500, independent claims 1, 7, and 10 recite in the preamble "multiphoton laser scanning microscope" whereas in Application No. 09/746,713, independent claims 1, 8, and 12 recite in the preamble "laser scanning microscope" and dependent claims 7 and 11 include the limitation of multiphoton excitation).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shun Lee whose telephone number is (703) 308-4860. The examiner can normally be reached on Tuesday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seungsook Ham can be reached on (703) 308-4090. The fax phone numbers for the organization where this application or proceeding is assigned are (703)

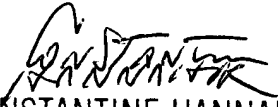
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872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.


CONSTANTINE HANNAHER
PRIMARY EXAMINER
GROUP ART UNIT 2878

SL
April 16, 2002